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Method of automatic recording of television programs after selection from teletext tables

Description

The invention relates to a method of automatic recording of television program contributions using a video recording device, wherein the selection of the program contributions to be recorded takes place in a particularly advantageous manner with the aid of the program tables offered via the teletext service.

In the Federal Republic of Germany an information system known as teletext has been introduced in which in certain data lines within the vertical blanking interval of the television signal data blocks are transmitted in addition to the current video information, and on the receiver side these data blocks are converted with the aid of a suitable decode into multicolour alphanumeric characters and also graphics which are displayed on the television screen as tables with different contents.

The tables are transmitted sequentially in the vertical blanking interval as data blocks and are stored in a memory associated with the receiver-side decoder so that after free selection the uninterrupted playback of a specific table is possible. A more detailed description of the teletext system in the Federal Republic of Germany is to be found in "Fernseh- und Kino-Technik" No. 5/1984, page 179 to 186 and "Rundfunktechnische Mitteilungen" Vol. 3, 1983, pages 116 to 134.

An important component of the teletext information service is the provision of program tables which show the program contributions from the different television organisations for a specific time period.

In a new system which is known as "teletext programmed video recorder" (TPV) the program tables contain, in addition to the data which are necessary for the representation of the

alphanumeric characters on the television screen, further data which are not visible on the television screen and by which the program contribution and the scheduled start and end thereof can be recognised.

A further system is known as "video program service". In this system the program contributions transmitted by the television organisations are provided with a data identifier which also identifies the program contribution, the start and the end. For this data identifier a specific data line is provided during the vertical blanking interval of the television signal. By comparison of this data identifier with the stored program data the automatic recording can be started.

Alternatively, it is also possible to accommodate this additional data identifier in the teletext data lines which also contain the data for the program tables. The teletext data of specific program tables according to the previously described TPV system then contain an additional data identifier by which the program contribution just transmitted can be identified. Therefore the automatic recording can also be started by means of the data contained hidden within the teletext signal, that is to say not displayed on the screen.

This additional information can be offered in a program-specific manner in the most frequently available tables (overview tables). Thus with this additional information the receiver-side decoder is capable, in accordance with data stored on the receiver side, of recognising specific program contributions and their transmission time.

A method of programming of video recorders after selection from teletext program tables is known from the periodical "Rundfunktechn. Mitteilungen", Vol. 6, 1982, pages 254 to 257. In this known method a programming keypad is used to select a teletext page which contains data for a program preview table. These data are decoded in a teletext decoder disposed in the television receiver and are displayed in the form of the program preview table on the screen of the television receiver. From this program preview table the viewer selects a desired program contribution by repeated actuation of a "select broadcast" key. After actuation of a "program contribution" key, the data which are necessary for the automatic

recording of the program contribution (transmission date, start and end time of the broadcast, designation of the broadcasting organisation) are taken from the said teletext page and stored in the program memory of the video recorder. This storage in the memory is confirmed to the viewer by inlaying of a commentary line on the screen of the television receiver.

Furthermore, from the patent application GB-A-2126002 it is known within the framework of a video recorder programming process that in the event of an overlap in timing of two broadcasts which are to be recorded, one of the broadcasts is given a higher priority than the other. Consequently, during subsequent recording the broadcast with the higher priority is recorded completely and the broadcast with the low priority is recorded incompletely. Moreover it is known from the said patent application to make the viewer aware by triggering an optical or acoustic alarm signal at the beginning of a broadcast to be recorded, if the video recorder is just in playback mode.

The object of the invention is to create, on the basis of the described TPV and VPS systems, a new advantageous method of automatic recording of television programs which allows the programming of the memory in the recording device in a particularly simple and user-friendly manner.

In a method with the features set out in the preamble to Claim 1, this object is achieved by the features set out in the characterising portion of Claim 1.

According to the prior art the teletext decoder is built into the television receiver. According to the invention the teletext decoder is built into the recording device or added on to the recording device. This results in the advantage that the provision of the program tables and the storage of the data necessary for the automatic recording can be carried out in the vide recording device with very little outlay. Nevertheless, by way of the control device of the recording device, which can also be constructed as a remote control, it is possible to call up any teletext table. Since the signal generator which converts the decoded teletext data into video signals is also built into the recording device or added on to the recording device, the video signal corresponding to the chosen teletext table can be delivered to the television

receiver and displayed on the screen by way of the output of the recording device which is in any case connected to the associated television receiver.

After display of the program table on the television screen the individual program contributions are then offered chronologically one after the other by a first electro-optical marker, for example by flashing, by a cursor or by a specific colouring (controlled manually or automatically). The electro-optical marker moves, manually triggered or automatically, over all the individual broadcasts in the program tables and thus offers in a chronological succession all individual positions of the program tables for selection. In this case by the manual triggering of a memory function the particular program contribution required for automatic recording is selected and stored with all the data necessary for the recording in the memory of the recording device. In the case of program contributions of which automatic recording is not required, the manual triggering of the memory function stops, the electro-optical marker on the screen then moves, manually triggered or automatically, to the next program contribution and offers this to the user of the device. If the memory function is triggered for an offered program contribution and as a result the program contribution is stored, then this is displayed by a second electro-optical marker, for example a special coloured script, on the screen. Thus the user receives acknowledgement of the storage of the relevant program contribution for automatic recording.

In accordance with the subordinate claims of the method according to the invention, after conclusion of the selection of the program contributions which are to be recorded, only these are assembled into a chronological sequence, listed on the screen and optically marked, preferably in the same way as in the selection of the program contributions, so that there is a clear distinction from the original teletext program tables. This electro-optical marker can advantageously also be carried over for the playback of the original teletext program tables so that when they are called up the program contributions already selected from the entire program for automatic recording can be recognised. Since the program contributions selected for the automatic recording can originate from different broadcasting organisations, there is a possibility of a clash in timing. Therefore according to the invention the clashing program contributions are made recognisable in the table of selected program contributions by an

alternating electro-optical marker, for example alternating flashing. According to the invention, by triggering of a confirmation function the user can then set the priorities as to which program contribution should be recorded primarily and completely and which contribution should be recorded in shortened form or not at all. When all clashes in timing have been eliminated by this procedure, those program contributions selected for automatic recording which exceed the recording capacity of the cassette inserted into the recording device are marked electro-optically, for example by flashing or by special coloured script, on the screen. Finally, a display on the screen then also shows within which time span or after which program contribution a change of cassette is necessary. In order that the necessary change of cassette can also be signalled without a screen display, in the video recording device a corresponding electro-optical or acoustic signal can also be generated which draws attention to the cassette change, even if the television receiver is switched off.

Finally, in a variant of the invention, as the programmed recording proceeds those data which identify the program contribution and the transmission time are also recorded and during playback are faded into the video signal in readable form via the decoder with signal generator which is in any case present in the recording device at the start of the playback of the particular program contribution. The microcomputer already present in the video recording device carries out this method step by combination of the data taken from the teletext offer, which are to be associated with the alphanumeric screen display, with the video signal to be recorded. However, care must be taken to ensure that the recording device records and plays back these data satisfactorily. Various proposed solutions for this are already known.

If the video recording device is already being used in playback mode before the processing of the stored program for automatic recording, then it is advantageous for a directly imminent programmed recording to be signalled electro-optically and/or acoustically so that the user is made aware of the necessary switch-over to the automatic recording mode. This warning signal can also, in a manner which is known *per se*, trigger the switch-over from the playback to the recording mode and a search run of the recording medium into a position from which

the imminent automatic recording is joined on without an interval to the automatic recordings already completed.